

Instructional Timeline – Kindergarten Mathematics – 2nd Nine Weeks	
Unit 2A: Developing Number Sense	
Suggested Time Frame: ≈ 7 weeks	
Introduction	The Instructional Timeline, as required by RRISD Local Board Policy (EG – Local, 246909), breaks down the content of each nine-week period into smaller, more manageable units of instruction.
Description	<p>Prior to learning thinking strategies for basic addition and subtraction facts in first and second grades, students need to have mastered the prerequisite skills. In this 7-week unit, students will begin to learn prerequisite skills and they will continue to develop these skills in Unit 3A in the third nine weeks and Unit 4C in the fourth nine weeks.</p> <p>Students will use concrete and pictorial models to create numbers to name quantities and to describe the number of objects in a set. They will justify their thinking verbally and through drawing. Students will explain their strategies, such as in the “Mathematician’s Chair,” rather than teacher modeling strategies. Students will display math concepts using concrete models in problem solving connected to everyday experiences.</p> <p>Students will count and compare numbers and will use ordinal numbers to describe position in a sequence.</p> <p>Students will demonstrate and practice their ability to subitize, or instantly recognize sets of objects (such as dots) in patterned arrangements, telling how many without counting. Students will develop their conceptual understanding of the relationships between the numbers 1-10 and the anchor numbers of 5 and 10 and will use five-frames and ten-frames in problem solving. Students will learn to count on and back two or three from any number, from 4 to 9, and will connect this with the concepts of “more than” and “less than.”</p> <p>Students will develop their ability to conceptualize a number as being made up of two or more parts and their understanding of the part-part-whole model and related number relationships. They will also use invented strategies and concrete objects to model and explore a variety of CGI problem types in real-world contexts to develop an understanding of the operations of addition and subtraction.</p>
TEKS/SEs taught during this period	<p>K.1 Number, operation and quantitative reasoning. The student uses numbers to name quantities.</p> <p>K.1A Use one-to-one correspondence and language such as more than, same number as, or two less than to describe relative sizes of sets of concrete objects.</p> <p>K.1B Use sets of concrete objects to represent quantities given in verbal or written form (through 20).</p> <p>K.1C Use numbers to describe how many objects are in a set (through 20) using verbal and symbolic descriptions.</p> <p>K.2 Number, operation, and quantitative reasoning. The student describes order of events or objects.</p> <p>K.2B Name the ordinal positions in a sequence including first, second, third.</p> <p>K.4 Number, operation and quantitative reasoning. The student models addition (joining) and subtraction (separating).</p> <p>K.4A Model and create addition and subtraction problems in real situations with concrete objects.</p> <p>Ongoing – Using Math in the Real World</p> <p>K.6 Patterns, relationships, and algebraic thinking. The student uses patterns to make predictions.</p>

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	<p>K.6B Count by ones to 100.</p> <p>K.11 Measurement. The student uses time to describe, compare, and order events and situations. K.11C Read a calendar using days, weeks, and months.</p> <p>K.12 Probability and statistics. The student constructs and uses graphs of real objects or pictures to answer questions. K.12A Construct graphs using real objects or pictures in order to answer questions K.12B Use information from a graph of real objects or pictures in order to answer questions</p> <p>K.13 Underlying processes and mathematical tools. The student applies Kindergarten mathematics to solve problems connected to everyday experiences and activities in and outside of school. K.13A Identify mathematics in everyday situations. K.13B Solve problems with guidance that incorporates the processes of understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness. K. 13C Select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking or acting it out in order to solve a problem. K.13D Use tools such as real objects, manipulatives, and technology to solve problems.</p> <p>K.14 Underlying processes and mathematical tools. The student communicates about Kindergarten mathematics using informal language. K.14A Communicate mathematical ideas using objects, words, pictures, numbers and technology. K.14B Relate everyday language to mathematical language and symbols.</p> <p>K.15 Underlying processes and mathematical tools. The student uses logical reasoning. K.15A Justify his or her thinking using objects, words, pictures, numbers, and technology.</p>
Generalizations	<ol style="list-style-type: none"> Counting tells how many things are in a set. The position of a thing in a sequence can be described using words such as first, second, and third. Numbers are related to each other through a variety of number relationships. Numbers can be broken apart and put together in a variety of ways. Small whole numbers can be quickly recognized in patterned arrangements of dots. Computation problems can be solved in a variety of ways. Thinking strategies can be represented with physical models.
Essential Questions	<ul style="list-style-type: none"> How many things are in this set (displaying a set of items or a collection of dots)? Who is first in line? Fourth? In what position is Jane? Display sets of 4-9 items or dots and add one or two more (or remove one or two) and ask how many there are. How many different combinations for a particular number can you make using two parts (using manipulatives)? How many dots did you see? How did you see them? (Flash dot cards) Explain how you figured out the answer to this word problem. What can you tell us about (a number) looking at your frame? (using 5- and 10-frames) Show me what you are thinking (using manipulatives).

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Core Components	<p>Including Statements</p> <ul style="list-style-type: none"> ▪ Student uses and explains his or her strategies – rather than teacher modeling strategies that student imitates ▪ Uses written forms of quantities ▪ Verbalizes the total amount in a set ▪ Uses a number to label parts of sets ▪ Models joining and separating using manipulatives as story problems are read aloud ▪ Describes joining and separating situations created by students ▪ Tells stories involving joining and separating ▪ Solves all CGI problem types using strategies, such as direct modeling, counting, and invented strategies, that are meaningful to the student (Link to example CGI problems) ▪ Joins and separates sets given in real life situations ▪ Uses problem situations from the classroom such as dividing a snack equally among all students and discuss whether solutions are reasonable or unreasonable ▪ Solves problems from every mathematical strand (number concepts, geometry, measurement, underlying processes, pattern) using classroom tools ▪ Uses everyday classroom situations as opportunities to problem solve ▪ Shares strategies verbally during and after the problem solving process and justifies solutions, such as in the "Mathematician's Chair" ▪ Explains and records observations in every mathematical strand using objects, words, pictures, numbers, and technology ▪ Verbally describes relationships between numbers and ideas – kindergartener is not required to write an equation for solution • Uses 5-frames and 10-frames • Builds and compares numbers (Build 12, 20, 17) • Describes order in a sequence using terminology <i>first, second, third</i>, etc. • Uses manipulatives, drawings, and mental strategies to solve real world problem situations • Uses terms greater than, less than and equal to in identifying numbers and objects • Counts on and back one, two, or three from any number, from 4 to 9 • Uses terms such as one more than and two less than. • Composes and decomposes numbers, such as 9 is a set of 6 and a set of 3, or it could be thought of as a set of 8 and a set of 1, or a set of 4 and a set of 5. • Instantly recognizes sets of objects (such as dots) in patterned arrangements and tells how many without counting <p>Teacher Note: Number concepts (see above), addition, and subtraction are introduced this nine weeks and are continued at the beginning of the third 9 weeks. This Developing Number Sense Unit also continues in the fourth 9 weeks. You may wish to consider using higher numbers and more challenging problem types as you work through the 2nd, 3rd and 4th nine weeks.</p>
Curricular Connections (within, between, and among disciplines)	<p>Operations Concept Development and Facts Mastery Sequence in the TEKS</p> <p>Related Science TEKS: K.2D record and organize data and observations using pictures, numbers, and words</p>
Required Lessons	<p>Mathematics TEKS Refinement Lessons:</p> <ul style="list-style-type: none"> • Numbers in a Flash - Spatial relationships/Subitizing. Use this lesson and its assessment tools to assess the students' ability to subitize and to determine how much practice to provide to develop and consolidate this skill.

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<p>Condensed version of “Six Squeaking Turtles” added 10/14/10</p>	<ul style="list-style-type: none"> • Spotting Numbers - Anchoring numbers to 5; Using five-frames. <p>Mathematics TEKS Connections Lessons:</p> <ul style="list-style-type: none"> • Condensed version of Six Squeaking Turtles (2 pages in length) <ul style="list-style-type: none"> ○ Original MTC lesson: Six Little Squeaking Turtles – Patterns in numbers and counting, one-to-one correspondence, and beginning operations (addition and subtraction) concepts • Modeling Addition and Subtraction – Modeling addition and subtraction by acting out a story problem, using manipulatives, and drawing.
<p>Recommended Lessons and Learning Experiences</p>	<p>Explore a variety of problem solving situations in the various CGI problem types. (Link to example CGI problems)</p> <p><u>More, Less, and Same</u></p> <p>Teaching Student-Centered Mathematics: Grades K-3, John A. Van de Walle (Look in Campus Library or order through i-Bistro District Library Catalog)</p> <ul style="list-style-type: none"> • “The Relationships of More, Less, and Same” – Discussion on pp. 37-38 • “Make Sets of More/Less/Same,” Activity 2.1, p. 38 and Figure 2.1 • “Find the Same Amount,” Activity 2.2, p. 38 and Assessment Note following, pp. 38-39; Blackline Master Dot Cards <p><u>Subitizing (Patterned Set Recognition):</u></p> <p>Teaching Student-Centered Mathematics: Grades K-3, John A. Van de Walle (Look in Campus Library or order through i-Bistro District Library Catalog)</p> <ul style="list-style-type: none"> • “Spatial Relationships: Patterned Set Recognition” - Discussion on pp. 43-44 and Figure 2.5 on p. 44 • Learning Patterns, Activity 2.8, p. 43 • Dot Plate Flash, Activity 2.9, p. 44 <p><u>Counting On and Counting Back:</u></p> <p>Teaching Student-Centered Mathematics: Grades K-3, John A. Van de Walle (Look in Campus Library or order through i-Bistro District Library Catalog)</p> <ul style="list-style-type: none"> • Up and Back Counting, Activity 2.4, p. 40 • Calculator Up and Back, Activity 2.5, p. 41 • Counting On with Counters, Activity 2.6, p. 41 • Real Counting On, Activity 2.7, p. 41 • One and Two More, One and Two Less” - Discussion on pp. 44-45 and Figure 2.5 on p. 44 • One-Less-Than Dominoes, Activity 2.10, p. 44 • Make a Two-More-Than Set, Activity 2.11, p. 45 • A Calculator Two-More-Than Machine, Activity 2.12, p. 45 <p><u>Five-Frame and Ten-Frame:</u></p> <p>Teaching Student-Centered Mathematics: Grades K-3, John A. Van de Walle (Look in Campus Library or order through i-Bistro District Library Catalog) Blackline Masters for Ten Frame and Five Frame</p>

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- “Anchoring Numbers to 5 and 10,” Discussion on pp. 45-46
- Five-Frame Tell-About, Activity 2.13, p. 46 and Figures 2.6 and 2.7
- Crazy Mixed-Up Numbers, Activity 2.14, pp. 46-47
- Ten-Frame Flash Cards, Activity 2.15, p. 47

Breaking Numbers Apart and Putting Them Together (Decomposing and Composing):

Teaching Student-Centered Mathematics: Grades K-3, John A. Van de Walle (Look in Campus Library or order through [i-Bistro District Library Catalog](#))

- “Basic Ingredients of Part-Part-Whole Activities” and “Part-Part-Whole Relationships,” Discussion on pp. 47-49 and Figure 2.9
- Build It in Parts, Activity 2.16, pp 48-49 and Figure 2.8
- Two out of Three, Activity 2.17, p. 50
- Covered Parts, Activity 2.18, p. 50 and Figure 2.10
- Missing-Part Cards, Activity 2.19, p.50 and Figure 2.10
- I Wish I Had, Activity 2.20, p. 51
- Calculator Parts of 8 Machine, Activity 2.21

Dot Card Activities – to deepen thinking about numbers, patterns, counting, relationships

Teaching Student-Centered Mathematics: Grades K-3, John A. Van de Walle (Look in Campus Library or order through [i-Bistro District Library Catalog](#))

[Blackline Master Dot Cards](#)

- Double War, Activity 2.22, p. 53
- Dot-Card Trains, Activity 2.23, p. 53
- Difference War, Activity 2.24, p. 53
- Number Sandwiches, Activity 2.25, p. 53

Investigations

Unit 1: Who Is in School Today?

Introducing Counting Around the Circle pg. 33

Introducing the Counting Jar pg. 59-60

Assessment Checklist pg. 61

Unit 2: Counting and Comparing: Measurement and the Number System 1

Entire Unit

Investigations Texas Curriculum Unit

Ordinal Positions pg.23

Before and After pg. 31

Mathematics TEKS Toolkit Clarifying Activities

[Number, Operations, and Quantitative Reasoning](#) – Scroll to activities for K.1B, K.1C, K.2B, and K.4

Mathematics TEKS Toolkit Clarifying Lesson

[Using Numbers Everywhere](#) (This part may have already been used in Unit K-1A)

[Learning Centers List](#) (Use centers that are appropriate for your students at this time of year or modify as appropriate.)

Navigating through Numbers and Operations in PreK - Second Grade, NCTM (Find in Campus Library or order through [i-Bistro District Library Catalog](#))

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- Choose a Number pg.16 – 18 - Modeling Numbers
- Counting in Different Ways pg. 19 – 20 – Pre-requisite for this lesson is counting from 1 to 100
- Ducks in a Line pg. 21 – 22 - Ordinal Numbers
- Frames pg. 47 – Five and Ten Frames [Blackline Masters for Ten Frame and Five Frame](#)

Engaged Activities

- Have students draw a numeral card from a pile and create a set of objects equal to the given numeral.
- Have students draw 3 numeral cards from a pile and create a set of objects equal to the given numerals. The child should name the pile of objects that is less than, more than, equal. You can roll a dice and do the same thing. For a challenge, roll two dice and add the numerals.
- Have students gather a set number of “materials” and pass them out to their table.
- Place number cards and pictures of objects in a pocket chart center. Have a student place a numeral card in the pocket chart. Then, place the corresponding number of picture cards next to the numeral. (Example: 5... next to the 5 are five pictures of cats... extend by having the child label 5 cats on an index card and place the index card in the pocket chart after the five cat pictures)

Calculator: Explorations: *Uncovering Math with Manipulatives and the TI-10* (Find in Campus Library or use link below.)

- [Action Packed Stories pg.1-4](#)

enVision MATH

Topic 3: One to Five

- Lesson 1 Additional Activity: 38A
- Lesson 2: 39A
- Lesson 3 Additional Activity: 42A
- Lesson 4 Additional Activity:44A
- Lesson 5: 45A
- Lesson 6: 47A
- Additional Activity may be a better option for this lesson: 48A
- Lesson 7:49A
- Lesson 8: 51A

Note: Use the Interactive Lessons as a guide on how to teach/facilitate the activity or lesson chosen.

The Differentiated Instruction Lessons are a great resource for counting through movement.

Topic 4: More and Fewer

- Lesson 1 Visual Learning: 58
- Play the Advanced Game from Differentiated Instruction: 58C
- Lesson 2 Additional Activity: 60A
- Differentiated Instruction On Level and Advanced: 60C
- Lesson 3 Visual Learning:62
- Lesson 3 Additional Activity:62A
- Lesson 4 Visual Learning:64A
- Additional Activity:64A

Corrected
calculator
lesson link
10/14/10

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	<ul style="list-style-type: none"> • Lesson 5: 65A • Lesson 6:67A <p>Topic 5: Six and Ten</p> <ul style="list-style-type: none"> • Choose the Additional Activity and Differentiated Instruction Activities for each lesson and supplement as needed with the interactive lessons. • Lesson 5: 83A • Lesson 10: 93A • Lesson 13: 99A <p>Topic 6: Comparing Numbers</p> <ul style="list-style-type: none"> • Lesson 1: 107A • Lesson 3 Differentiated Instruction • Lesson 4-7: Additional Activities and Differentiated instruction Activities • Lesson 8 Differentiated Activity:122C
Differentiation	<p><u>English Language Proficiency Standards Student Expectations with Sentence Stems and Activities to support implementation of the Standards</u> (Note: when you open the link, it may ask you for a certificate or if it is OK to open the file, click OK each time you see the screens.)</p> <p>Less Depth and Complexity:</p> <ul style="list-style-type: none"> ▪ Math TEKS Connections strategies from <u>"Rapid Assessments"</u> pg. 953, 956, 959, 961, 964 ▪ Describe relative sets: create sets with more or less objects; more than and same are usually understood before less than; continue modeling language in various contexts ▪ Represent quantities in verbal/written form (through 20): If a child counts a set aloud and then responds with incorrect answer to "how many," it may be that the child can rote count but cannot understand that the last number stated names the set (cardinality). Try giving the child "6" blocks and saying "Here are 6 blocks. Give 6 blocks to a friend." ▪ Small group and partner with peer model ▪ Small group time provided (pre-teach) ▪ Signal (Example: thumbs up/down) to share ideas or answers and to check for understanding ▪ Select answer from given choices ▪ Use pictures and hands on materials to explain vocabulary <p>More Depth and Complexity:</p> <ul style="list-style-type: none"> ▪ Math TEKS Connections strategies from <u>"Rapid Assessments"</u> pg. 953, 956, 959, 961, 964 ▪ Describe relative sets: Compare sets of objects that take up different amount of space; challenge student to count set of objects placed in a variety of positions; compare sets of objects that take up different amounts of space. Represent quantities in verbal/written form (through 20: If child begins to "see" sets of number without counting the set (subitize) and displays understanding that a set of object remains the same even if in different positions; begin to consider moving beyond sets of 20 using base ten blocks ▪ Kidspiration ▪ Use concrete, pictorial and abstract models and representations ▪ Create own problems beyond grade level expectations ▪ Students use multiple strategies and explanations ▪ Small group (extension)
Instructional	<u>Round Rock ISD Elementary Mathematics Webpage</u>

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Resources	
Assessment Resources	<p>Rapid Assessments</p> <p>See Assessment Note on pp. 53-54 in <i>Teaching Student-Centered Mathematics: K-3</i>, by John A. Van de Walle, regarding assessing students' progress with number relationships (spatial representations, one and two more or less than, 5 and 10 anchors, and part-whole relationships).</p> <p>Access 4 Database - Consult campus Instructional Technology Specialist for assistance with accessing Acces4 database.</p>